

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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U.S. AIR FORCE EELV FALCON 9 CERTIFICATION PROCESS

Abstract

The U.S. Air Force Space and Missile Systems Center (SMC) has established a process of certifying new entrants to the Evolved Expendable Launch Vehicle (EELV) program. This flexible process is being executed to enable launch systems to be certified to be eligible for future EELV launch service awards. The SpaceX Falcon 9 Launch System was the first to be certified in May 2015, making this the first new EELV eligible launch system in over 20 years. In January 2016 SMC updated the certified baseline configuration of SpaceX's Falcon 9 Launch System to Falcon 9 Upgrade, for use in National Security Space (NSS) missions. The Air Force and SpaceX invested significant amount of resources in the baseline certification effort which encompassed certification criteria, including discrete tasks, flight demonstrations, verifying payload interface requirements, major subsystem reviews and several audits in order to establish the technical baseline from which the Air Force will make future flight worthiness determinations for launch. The EELV operational launchers currently consists of the United Launch Alliance Delta IV and Atlas V family of launch vehicles developed in the 1990's by McDonnell Douglas and Lockheed Martin, respectively. These launch vehicles were developed as commercial launch systems with significant government insight and certification prior to first flight with National Security Space (NSS) systems. The Air Force strategic intent with new entrants is to promote the viability of multiple domestic EELV-class launch providers as soon as feasible, while maintaining the high reliability of the program. To this end, a set of criteria that any new entrant must meet in order to launch a high-value operational national security spacecraft was established and applied to the Falcon 9 launch system. Requirements and specifications were identified and the documents and data that SpaceX would need to provide were defined. The evaluation process SMC employed in assessing Falcon 9 against the requirements, specifications, and standards was developed and executed. This paper discusses the Air Force new entrant certification process, modifications to the process over time to enable launch service award competition, and the Falcon 9 verification efforts conducted to achieve certification.